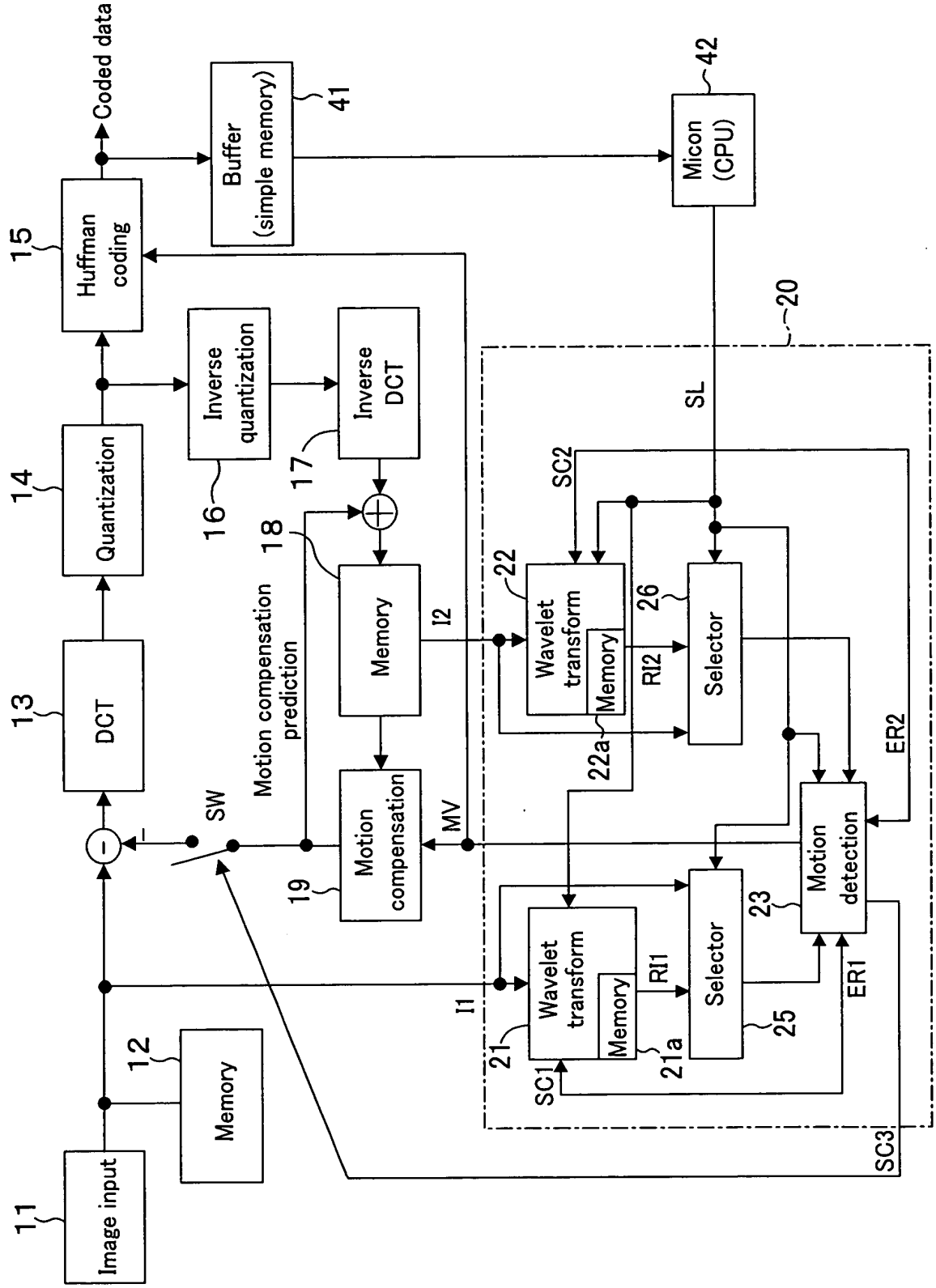
FIG.1


Coded data
Buffer (simple memory)
41
42
Micon (CPU)
15
Huffman coding
20
Inverse quantization
Inverse DCT
16
17
18
14
Quantization
SL
SC2
22
Wavelet transform
Memory
RI2
26
Selector
13
DCT
Motion compensation prediction
Memory
I2
22a
SW
MV
Motion compensation
19
ER2
Motion detection
23
12
Memory
I1
21
Wavelet transform
Memory
RI1
21a
Selector
25
ER1
SC1
11
Image input
SC3

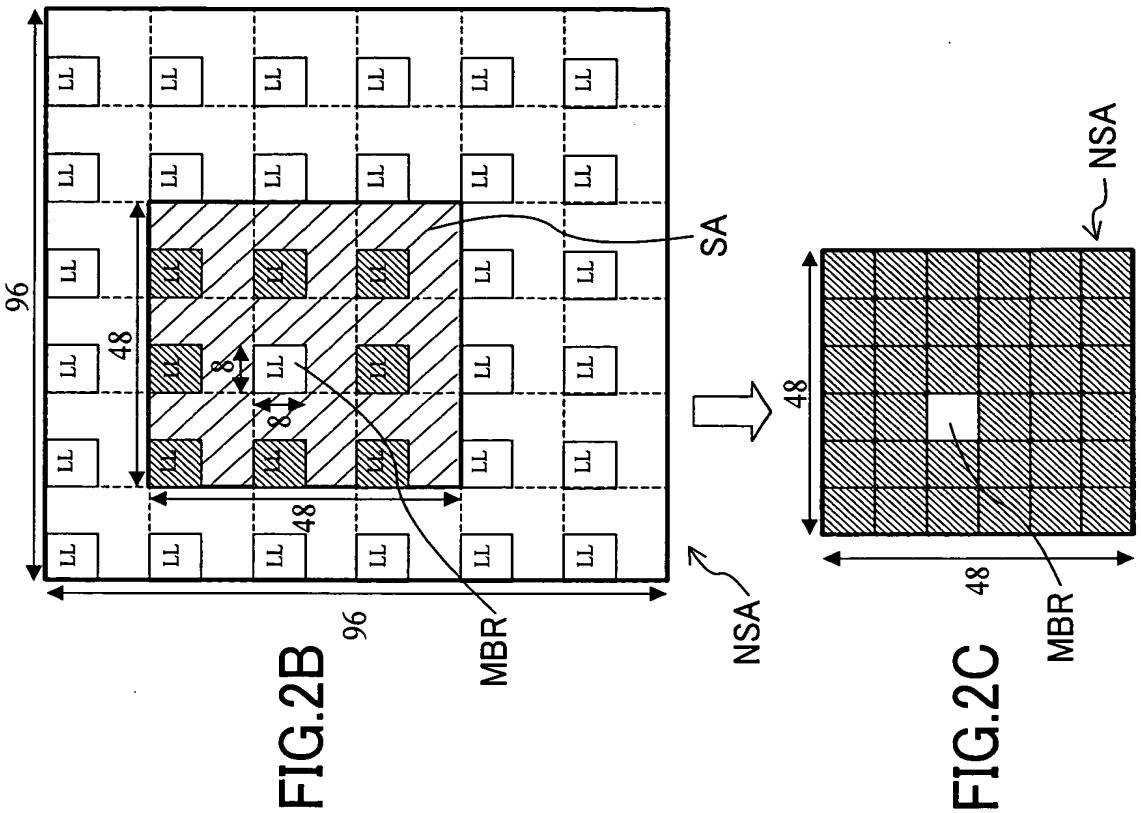


FIG.2B

FIG.2C

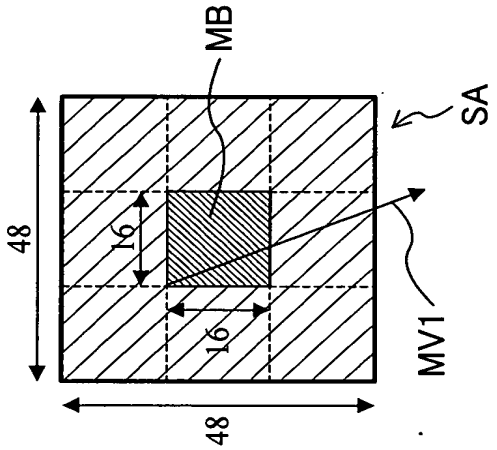
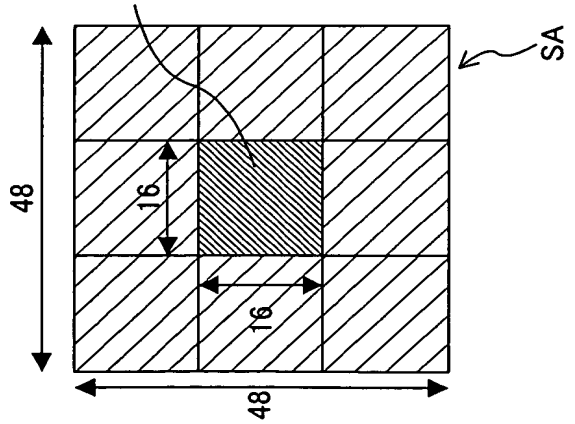


FIG.2A

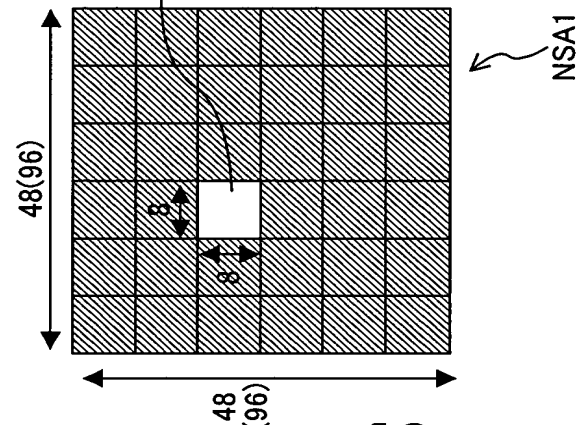
FIG.3A



Wavelet transform (1st time)

48 (96)

FIG.3B



Wavelet transform (2nd time)

48 (192)

FIG.3C

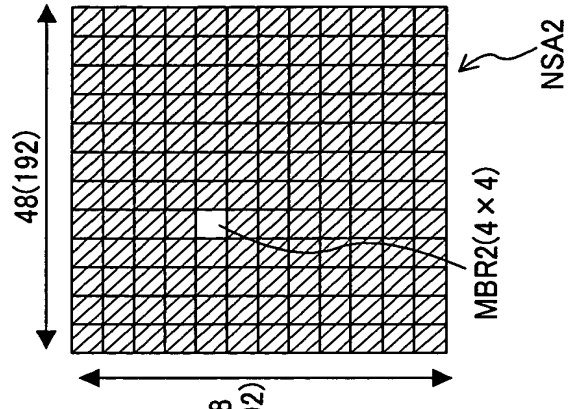


FIG.4

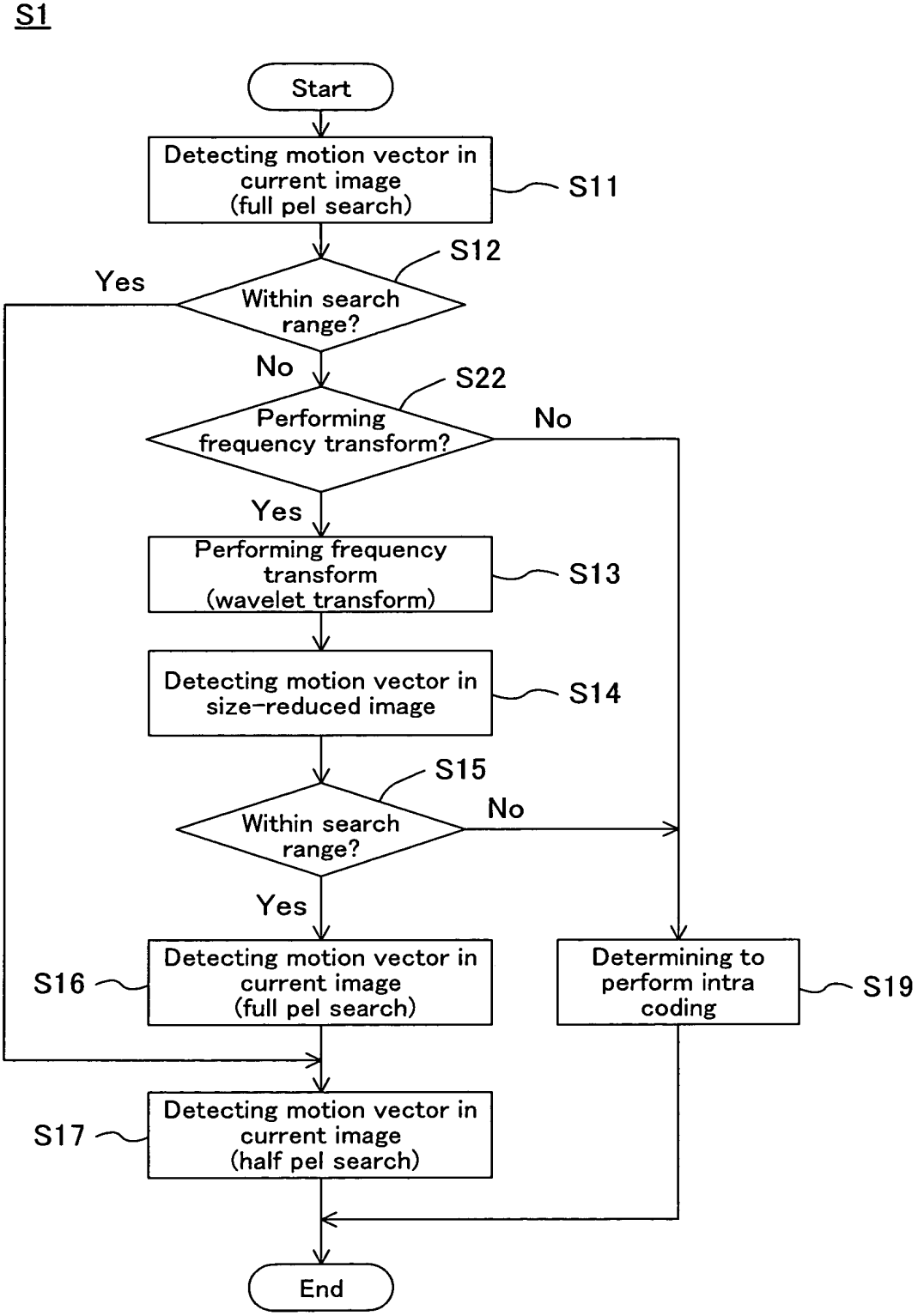

S1
Start
Detecting motion vector in current image (full pel search)
S11
S12
Within search range?
Yes
No
S22
Performing frequency transform?
No
Yes
Performing frequency transform (wavelet transform)
S13
Detecting motion vector in size-reduced image
S14
S15
Within search range?
No
Yes
S16
Detecting motion vector in current image (full pel search)
Determining to perform intra coding
S19
S17
Detecting motion vector in current image (half pel search)
End

FIG.5

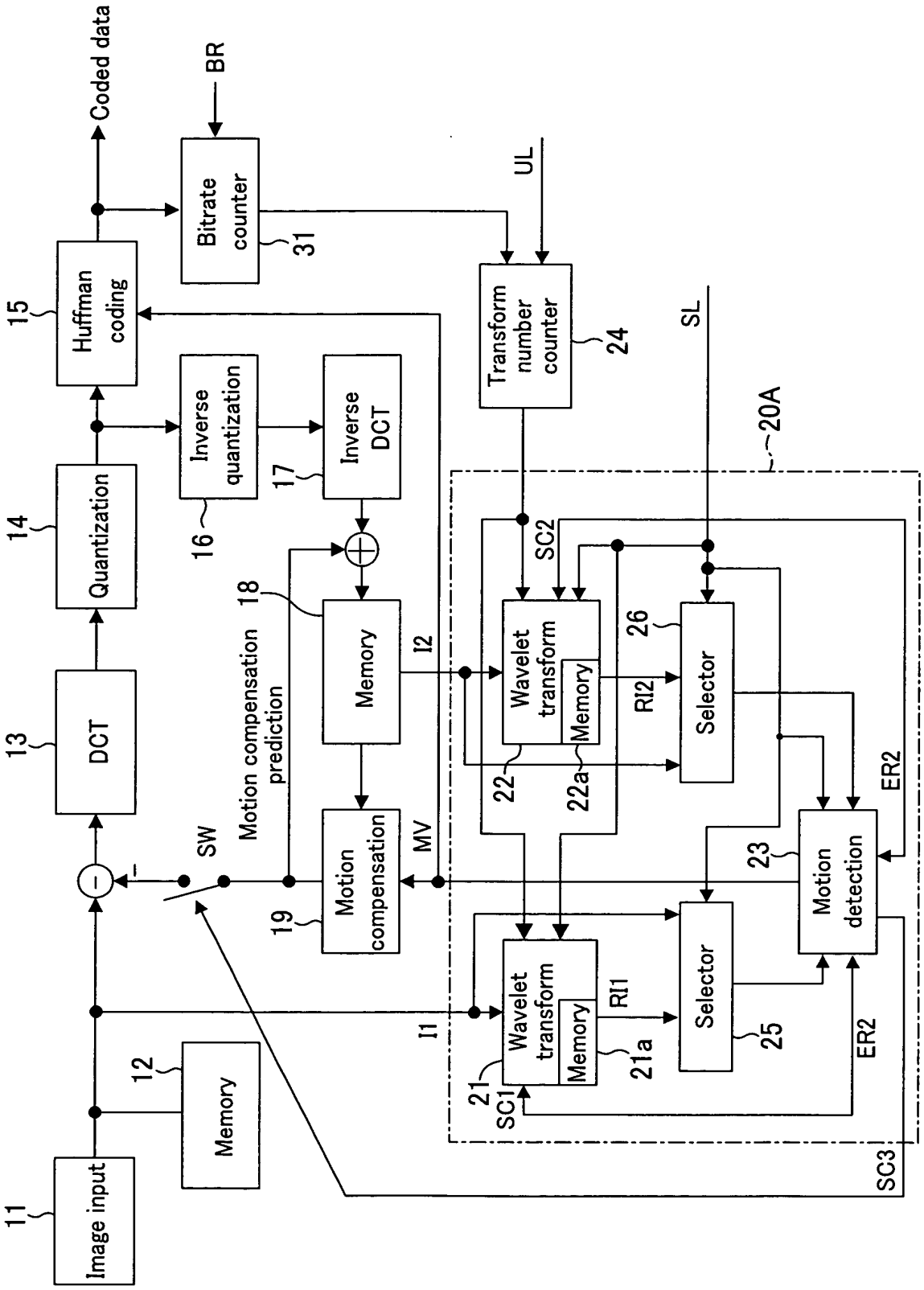

Coded data
BR
UL
SL
Bitrate counter
31
Huffman coding
15
Quantization
14
DCT
13
Inverse quantization
16
Inverse DCT
17
Transform number counter
24
20A
Memory
18
I2
Motion compensation prediction
SW
Motion compensation
19
MV
Wavelet transform
Memory
22
22a
SC2
RI2
Selector
26
Motion detection
23
ER2
Image input
11
Memory
12
I1
Wavelet transform
Memory
21
21a
SC1
RI1
Selector
25
ER2
SC3

FIG.6

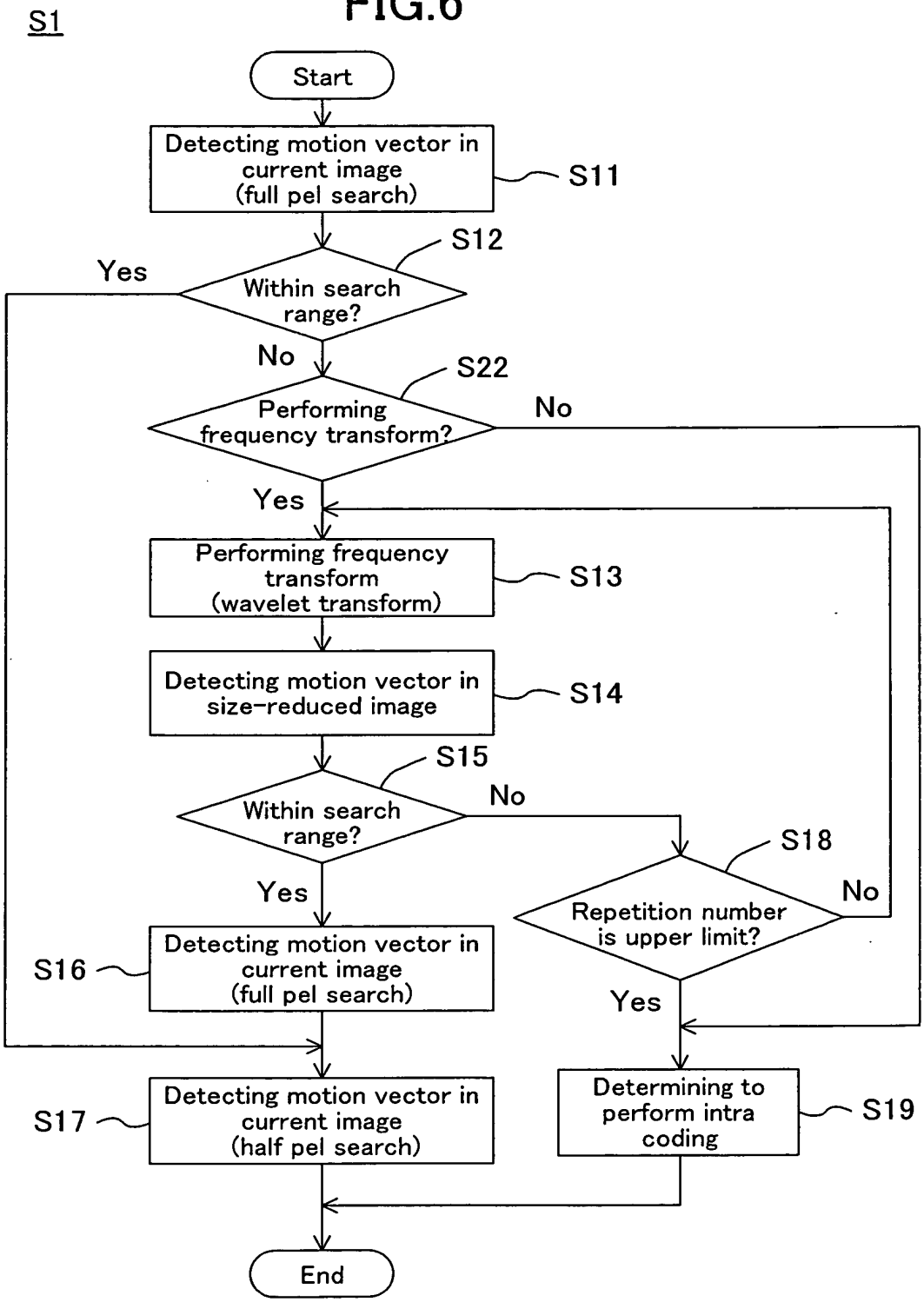

S1
Start
Detecting motion vector in current image (full pel search)
S11
S12
Within search range?
Yes
No
S22
Performing frequency transform?
No
Yes
Performing frequency transform (wavelet transform)
S13
Detecting motion vector in size-reduced image
S14
S15
Within search range?
No
Yes
S18
Repetition number is upper limit?
No
Yes
S16
Detecting motion vector in current image (full pel search)
S17
Detecting motion vector in current image (half pel search)
Determining to perform intra coding
S19
End

FIG.7

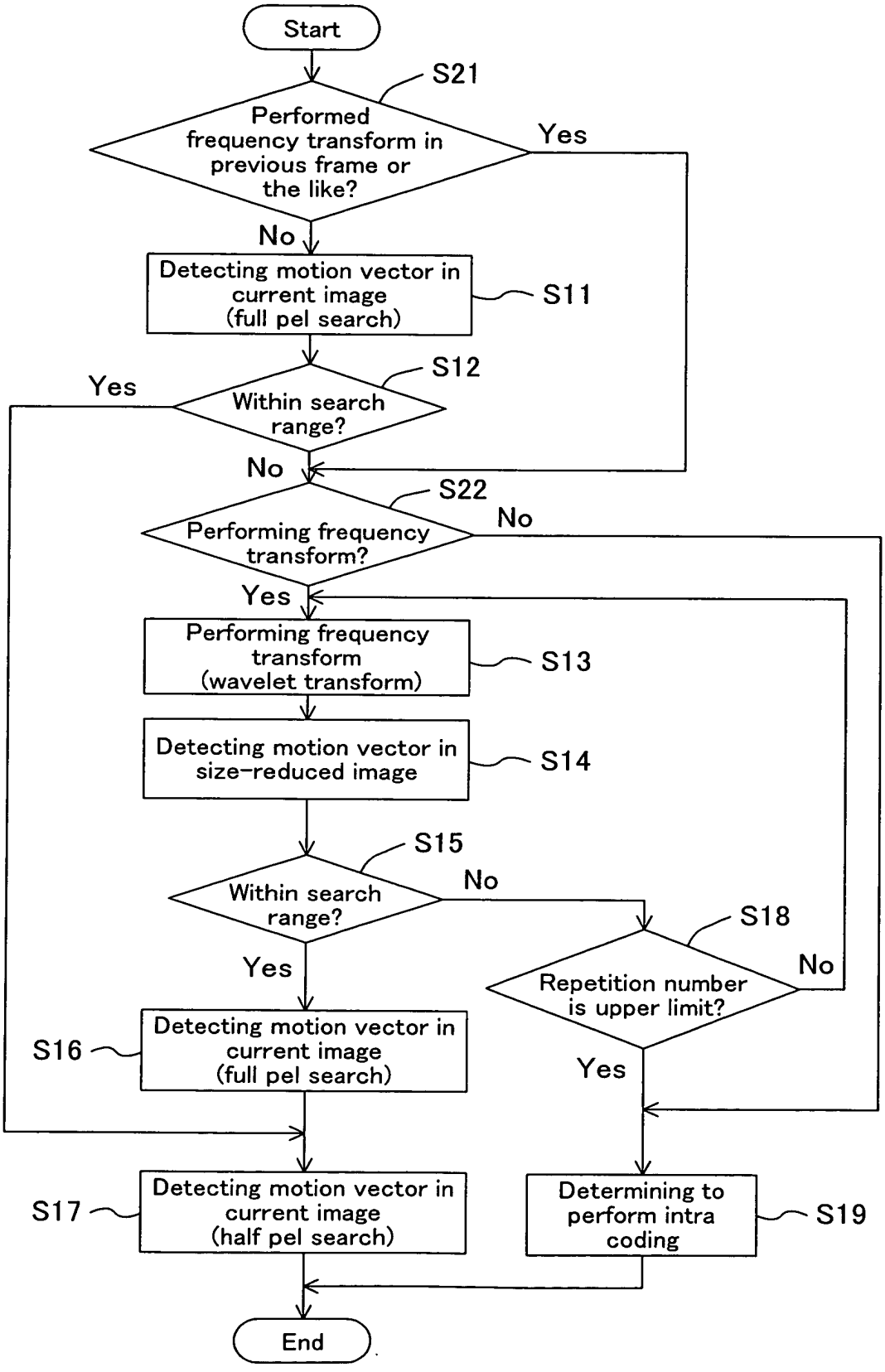

S1
Start
S21
Performed frequency transform in previous frame or the like?
Yes
No
Detecting motion vector in current image (full pel search)
S11
S12
Within search range?
Yes
No
S22
Performing frequency transform?
No
Yes
Performing frequency transform (wavelet transform)
S13
Detecting motion vector in size-reduced image
S14
S15
Within search range?
No
Yes
S18
Repetition number is upper limit?
No
Yes
S16
Detecting motion vector in current image (full pel search)
S17
Detecting motion vector in current image (half pel search)
Determining to perform intra coding
S19
End

FIG.8

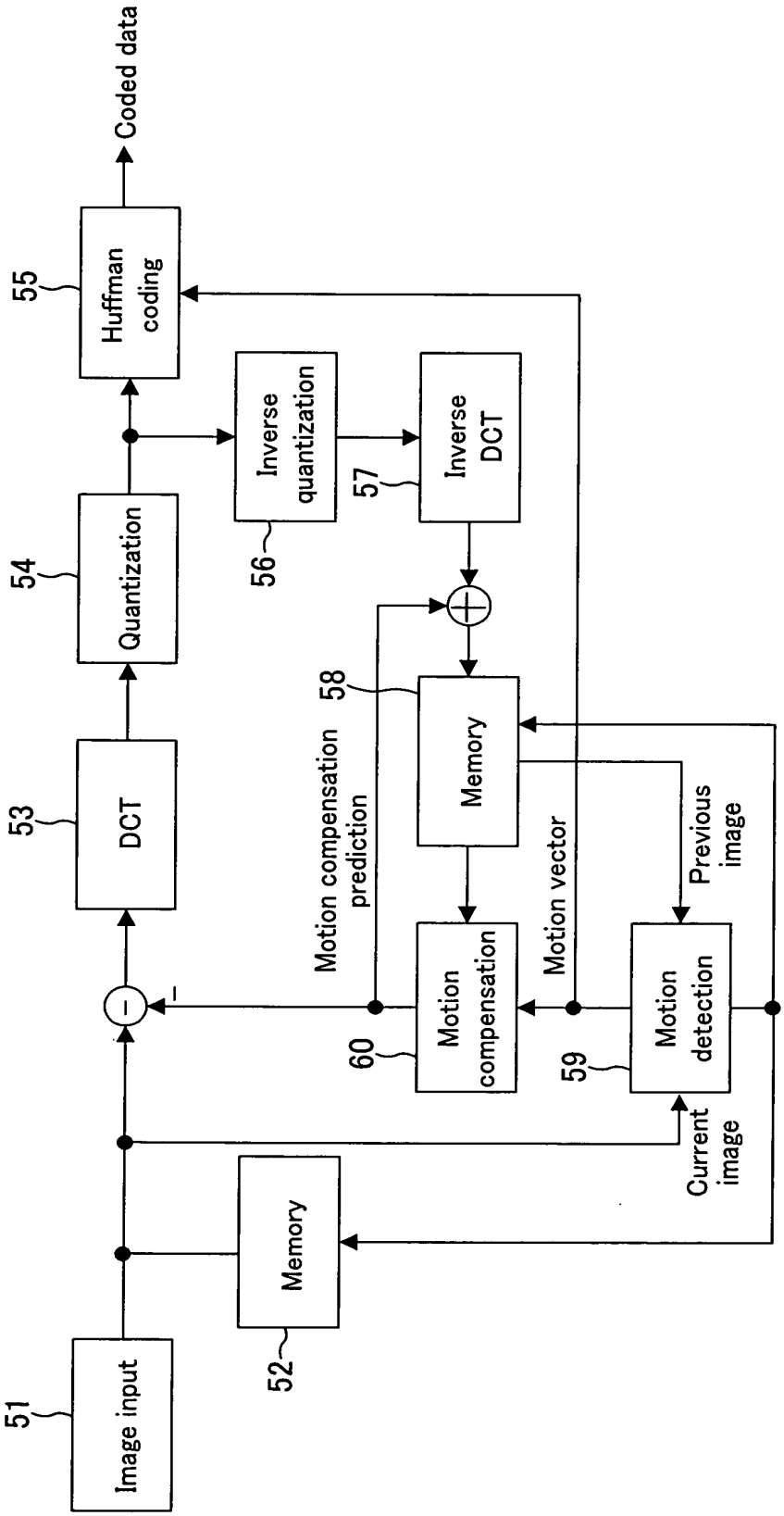

Coded data
55
Huffman coding
54
Quantization
53
DCT
56
Inverse quantization
57
Inverse DCT
58
Memory
Motion compensation prediction
Motion vector
Previous image
60
Motion compensation
59
Motion detection
Current image
52
Memory
51
Image input

FIG.9A Reference frame (previous frame)

FIG.9B Current frame

FIG.9C Detected motion vector

FIG.9D Reference frame motion-compensated using motion vector

FIG.9E Difference between current frame and reference frame

FIG.9F Reference frame for comparison with subsequent frame

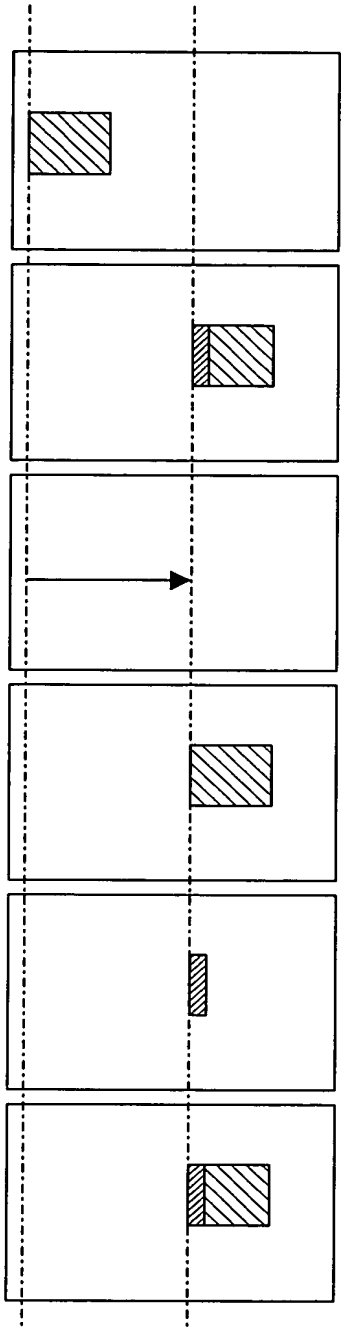
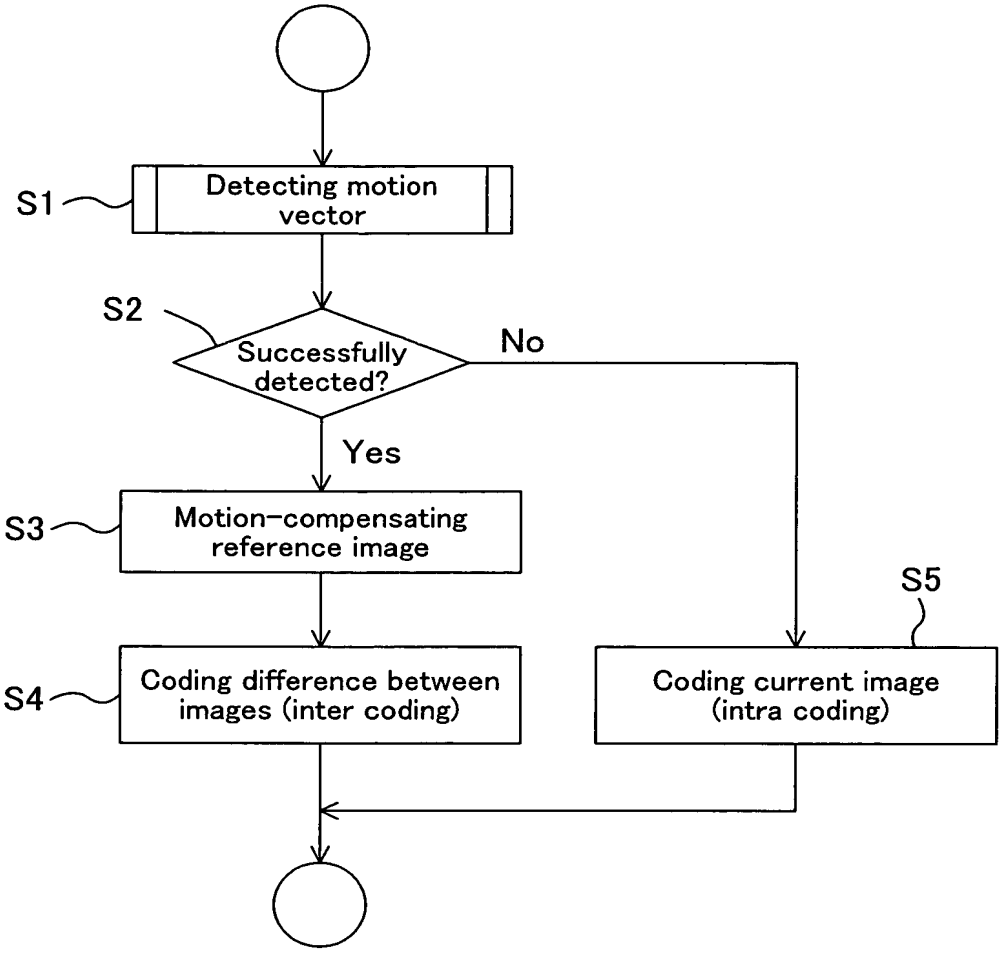


FIG.10


S1
Detecting motion vector
S2
Successfully detected?
No
Yes
S3
Motion-compensating reference image
S4
Coding difference between images (inter coding)
S5
Coding current image (intra coding)